



DSC 2020 EUROPE VR

Driving Simulation & Virtual Reality Conference & Exhibition



Title

Accelerate automotive simulation development

Presenter

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Mark Collins - Epic Games

Simulation Applications and Development

Unreal Engine introduction

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Epic Games

Founded **29 years** ago

HQ in **Cary, NC**

15+ countries

52 offices worldwide

2,600+ employees



A Lot has happened since....

Key takeaways:

1. Epic Games is strongly investing in some core non-game industries including **Simulation**
2. **Unreal Engine** is free (source code is available for free on GitHub as well)
3. **Release of UE5** with new features



A large, stylized number '5' composed of thin, light blue lines. The top horizontal bar is slightly offset to the right, and the bottom curve is a simple arc.

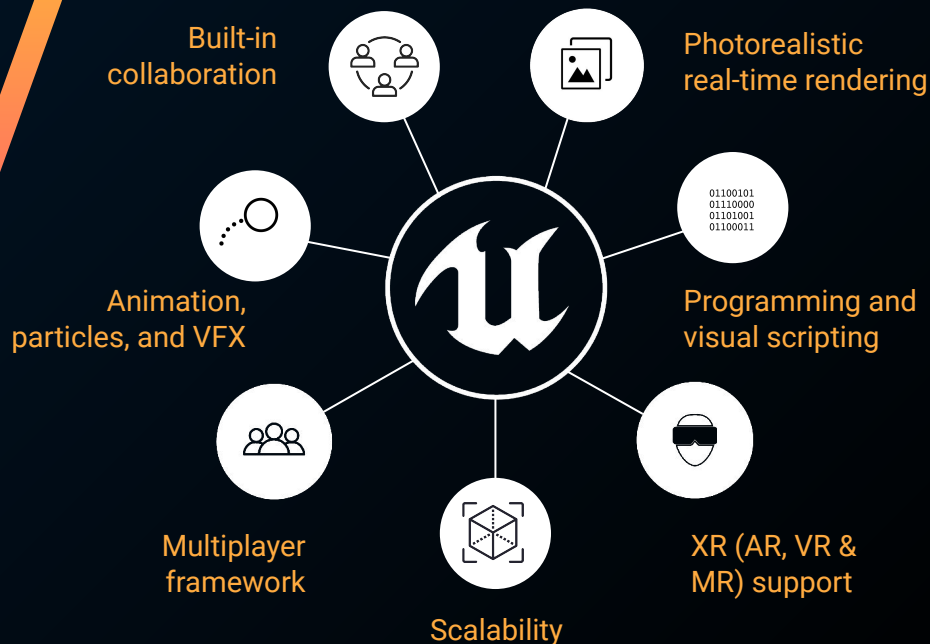
UNREAL ENGINE

Prepare for the unexpected. Prevent life-threatening situations. And do it in the most realistic way possible. With Unreal Engine, simulation teams no longer have to compromise—real-time, realism, and accuracy now live in the same place.

Comprehensive toolset

Unreal Engine is the world's most open and advanced real-time 3D creation tool. It gives you everything you need to start, ship, grow, and stand out from the crowd.

- Pipeline integration
- World building
- Animation
- Rendering, lighting, and materials
- Simulation and effects
- Gameplay and interactivity
- Platform support
- Integrated media support
- Developer tools



Unreal Engine 5

Nanite virtualized geometry

- Film-quality assets with billions of triangles
- No more polygon-count budgets
- No need for normal maps

Lumen fully dynamic real-time global illumination

- Instantly reacts to light and scene changes
- No more light map baking
- No need to author light map UVs

Virtual textures

- Use the highest-quality 8K cinematic assets

Spatialized audio

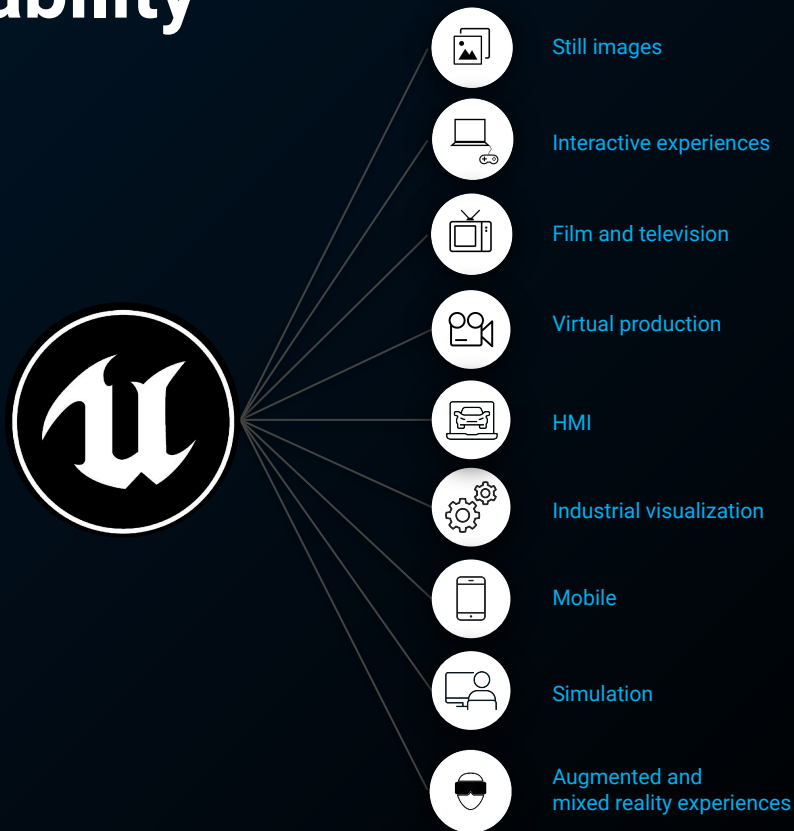
- Realistic 3D soundfields increase immersion



An ecosystem with scalability

Once in Unreal Engine, assets can be used in a wide variety of use cases

- Reuse visualization and marketing department car models, environments, and UI
- Built-in polygon reduction and level of detail support scales complexity with target platform
- HLOD automatically reduces draw calls





AV SIMULATION'S AI TRAINING

UNREAL BUILD: AUTOMOTIVE

AI-centric Simulation

Virtual Environments

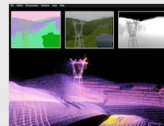


High fidelity graphics
Control over environment, objects,
Domain Randomization

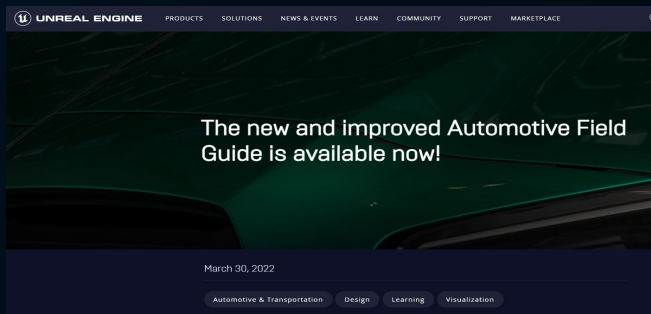
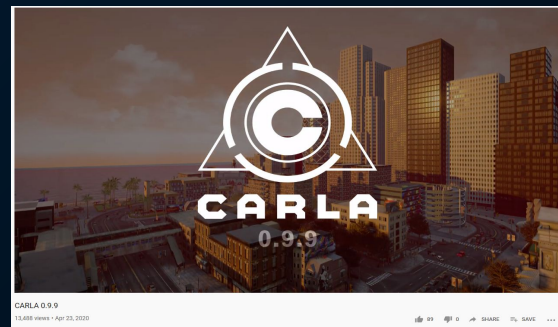
Enabling real-world AI with Simulation

Labelled datasets
Object detection, segmentation
Localization and planning
Reinforcement learning

Robot + sensor suite



Robot physics models
Multiple sensor modalities
Recording robot states, sensor data, actions



Algorix



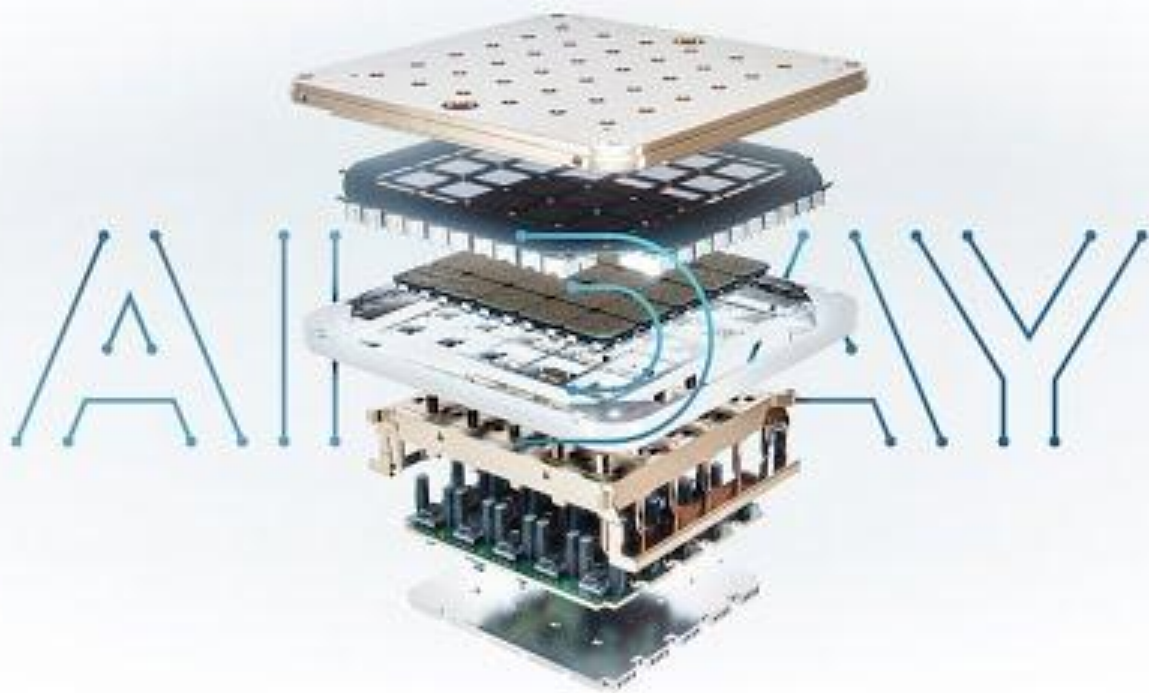
Mass AI

Mass Entity / State Trees / Mass Crowd / Machine Learning / Neural Network Inference

Crowd and Traffic System



Toggle Ma





THE MATRIX AWAKENS

AN **UNREAL ENGINE 5**
EXPERIENCE



UNREAL ENGINE

Contact us...

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